CLAIMS

What is claimed is:

1. A method, comprising:

analyzing a sacrificial material sample by high performance liquid chromatography; and

identifying chemical markers that correlate with material contaminants in the sacrificial material.

2. The method of claim 1, wherein the sacrificial material sample comprises a sacrificial light absorbing material.

3. The method of claim 2, further comprising identifying chemical markers that correlate with a degradation of the sacrificial light absorbing material.

4. The method of claim 1, wherein identifying further comprises detecting the chemical markers with an ultraviolet/visual and mass spectroscopy system.

5. The method of claim 4, wherein the ultraviolet/visual and mass spectroscopy system has a monitoring wavelength of about 240 nanometers to about 260 nanometers.

6. The method of claim 2, wherein analyzing further comprises:

providing an eluent having a methanol and water mixture; and

flowing the eluent at a rate from about 0.3 to about 1.0 ml/min

7. The method of claim 2, wherein identifying further comprises providing an analytical column having a length of about 5 centimeters to about 25 centimeters in length.

8. The method of claim 3, wherein identifying further comprises;

analyzing the sacrificial light absorbing material a first time to generate a first signal;

analyzing the sacrificial light absorbing material a second time to generate a second signal; and

comparing the first signal to the second signal.

9. The method of claim 1, wherein the sacrificial material sample comprises a spin-on-glass material.

10. The method of claim 1, wherein analyzing the sacrificial material is done prior to use of the sacrificial material during semiconductor fabrication in process.

11. A method, comprising:

performing a first analysis of a sacrificial light absorbing material by high performance liquid chromatography;

performing a second analysis of the sacrificial light absorbing material by high performance liquid chromatography; and

identifying chemical markers correlating with a degraded sacrificial light absorbing material.

12. The method of claim 11, wherein identifying further comprises detecting the chemical markers with an ultraviolet/visual and mass spectroscopy system.

13. The method of claim 12, wherein the ultraviolet/visual and mass spectroscopy system has a monitoring wavelength of about 240 nanometers to about 260 nanometers.

14. The method of claim 11, wherein identifying further comprises comparing a first signal from the first analysis with a second signal from the second analysis.

15. The method of claim 12, wherein the second analysis is done within ten days of the first analysis.

16. The method of claim 11, wherein analyzing the first and second analysis of the sacrificial light absorbing material is done prior to use of the sacrificial light absorbing material during semiconductor fabrication in process.

17. The method of claim 14, wherein the sacrificial light absorbing material comprises spin-on-glass material.

18. A method, comprising:

analyzing a sacrificial light absorbing material with high performance liquid chromatography;

forming a conductive layer on a substrate;

forming a dielectric layer on the conductive layer;

patterning a layer of photoresist, after forming the dielectric layer, to define a region to be etched;

forming a first etched region by removing a first portion of the dielectric layer;

filling the first etched region with the sacrificial light absorbing material; and

forming a second etched region by removing the sacrificial light absorbing material and a second portion of the dielectric layer.

19. The method of claim 18, wherein analyzing further comprises detecting chemical markers that correlate to the sacrificial light absorbing material with an ultraviolet/visual and mass spectroscopy system.

20. The method of claim 19, wherein the ultraviolet/visual and mass spectroscopy system has a monitoring wavelength of about 240 nanometers to about 260 nanometers.

21. The method of claim 18, wherein the sacrificial light absorbing material is selected from the group consisting of a dyed SOP and a dyed SOG and that has dry etch properties similar to those of the dielectric layer.

22. The method of claim 18, wherein sacrificial light absorbing material is analyzed prior to filling the first etched region.

23. The method of claim 18 wherein the sacrificial material has the following properties:

it may be dry etched at substantially the same rate that the dielectric layer may be dry etched;

it may be wet etched at a significantly faster rate than the dielectric layer may be wet etched;

it may absorb light having a wavelength that is identical to the wavelength used to expose the photoresist to pattern it; and

it may completely and uniformly fill the first etched region.

24. The method of claim 21 further comprising:

forming a barrier layer on the surface of the conductive layer prior to forming the dielectric layer;

forming the first and second etched regions without first forming a second barrier layer on the surface of the dielectric layer;

removing part of the barrier layer after forming the second etched region; and

filling the first and second etched regions with a second conductive layer.

25. The method of claim 21, wherein the integrated circuit includes a dual damascene interconnect, and wherein the first etched region forms the via for the interconnect and the second etched region forms the trench for the interconnect.

26. The method of claim 21, wherein the integrated circuit includes a dual damascene interconnect, and wherein the first etched region forms the trench for the interconnect and the second etched region forms the via for the interconnect.